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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
Group Art Unit 3653

In re

Patent Application of:

Gilbert Dominguez

Serial No.: 09/760,958

Filed: January 16, 2001

Examiner: Tuan N. Nguyen

For: "DYNAMIC SORTATION OF ITEMS IN A CONTAINERIZATION SYSTEM"

I, Karen J. Jurkowski, hereby certify that this correspondence is being sent via Express Mail addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231, on the date of my signature.

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Karen J. Jurkowski
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1/24/03
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1/30/03

Copy Brief #8

APPEAL BRIEF

Assistant Commissioner for Patents
Washington, DC 20231

Sir:

Concerning the above-referenced patent application, the Applicant has appealed from the final rejection dated November 19, 2002. Applicant is submitting this Appeal Brief in triplicate in support of his appeal. Applicant is also enclosing a check in the amount of $320 for payment of the official filing fee for this Appeal Brief.

1. REAL PARTIES IN INTEREST

The real parties in interest are ABB AUTOMATION, INC., a company having a place of business at 2487 South Commerce Drive, New Berlin, Wisconsin, 53151-2717 (assignment recorded January 16, 2001).

2. RELATED APPEALS AND INTERFERENCES

There are no appeals or interferences related to this appeal.

3. STATUS OF CLAIMS

The present application, U.S. Patent Application No. 09/760,958, was filed on January 16, 2001. As noted in the specification, the current application is related to U.S. Patent Application No. 09/521,989, filed on March 9, 2000. Claims 15 and 18-25 have been finally rejected under 35 U.S.C. § 102. Each of claims 1-14, 16, and 17 have been finally rejected under 35 U.S.C. § 103(a). Applicant filed an amendment after the final rejection canceling claims 15, 24, and 25 and rewriting claim 16 in independent form. Thus, claims 1-14 and 16-23 are pending (see the attached Appendix) and are the subject of this appeal.

4. STATUS OF AMENDMENTS

Claims 1-25 were finally rejected under 35 U.S.C. § 102 or 35 U.S.C. § 103(a) in the Office action dated November 19, 2002. On January 24, 2003, Applicant filed an amendment after the final rejection canceling claims 15, 24, and 25 and rewriting claim 16 in independent form. Further, the dependency of claims 18, 19, and 20 was amended so that the claims depend on claim 16. These claims originally depended on claim 15, now cancelled. Claim 11 was also amended to clarify the antecedent basis of an element.

5. SUMMARY OF INVENTION

In the following summary of the invention, references to page and line numbers and to figures are with reference to the application filed on January 16, 2001. The reference numbers

reference the illustrated embodiments shown in Figures 1-6, and are included to ease the explanation below. Of course, other embodiments are envisioned.

In certain embodiments, the present invention relates to methods and systems for loading pallets and containers with mail trays, tubs, and other items. The methods and systems dynamically respond to changes in the volume and destination of those items. The invention may be implemented in a system 30 that in one embodiment includes two cells 32 and 34, each with a gantry robot 36, although the invention can be implemented with one cell. Each cell includes an open frame 38 that is secured to a hard surface such as the concrete floor of a building. The sides of the frame may be enclosed with a mesh. A number of doors 44 are provided in the mesh walls to provide access to the interior of the cell. The top of the cell is open and includes two tracks on which the robot travels. The robot is mounted on the cell such that it can move in a horizontal plane along two axes. A conveyor system 66 for moving items passes through the cells.

The robot includes a robot arm that is extendible in a vertical plane that is perpendicular to the plane in which the robot moves. A mechanical wrist is coupled to the end of the robot arm and an end effector or gripper is mounted on the wrist. The robot grasps the items from the conveyor system and delivers them to containers.

The cells include a number of locations (101, 103, 105, 107, 109, 111, 113, 115, 117, 119, 121, and 123) and each location defines a position for a container. A location may correspond to one or more physical bays in a cell. For example, a cart may fit within one bay while a pallet may require two bays. Pallets and carts are types of containers. Page 1, lines 19-20. Each location has a speed of loading rating that represents the time required for the robot to move an item from the position where the item is picked from the conveyor system to the

location of the container. In some instances the speed of loading rating may be a scaled, relative measurement value such as 1-100 or it may be an actual value such as the number of items moved per minute.

The containerization system is controlled by a control system 98. The control system 98 includes a sort scheme module 56 that includes a database of the physical layout of the cell, which represents the number and type of containers the cell is configured to hold and the destination assignments or scheme of destinations for the locations of the cell. The sort scheme module 56 communicates with a controller 55. The controller 55 receives data from the conveyor system and/or an item reader. The item reader 100 reads destination codes from the items sorted by the system.

The sort scheme module 56 determines whether a read destination code is assigned a location in the cell. If the destination code is assigned a location, the item is loaded by the robot in a container assigned to that location. If the destination code is not assigned a location, the sort scheme module determines whether to assign the destination code a location based on whether the destination code is in the scheme of destinations, the projected or historical number of items having the same destination code, and/or the speed of loading rating for each location.

The invention includes a method of sorting a plurality of items by destination. The method includes defining a number of locations, where each location represents a position for a container. The method also includes assigning each location a speed of loading rating, creating a scheme of destinations, reading a destination code from each of a plurality of items, and determining whether the destination code is assigned a location. If the destination code is assigned a location, the item is loaded in a container at the assigned location. If the destination code is not assigned a location, the method involves determining whether to assign the

destination code a location based on whether the destination code is in the scheme of destinations, the projected or historical number of items having the same destination code, and the speed of loading rating for each location.

6. ISSUES

The issue presented in this appeal is whether claims 1-14 and 16-23 are unpatentable under either 35 U.S.C. § 102 or 35 U.S.C. § 103(a) over U.S. Patent No. 6,227,378, issued to Jones et al. (the "Jones reference") and U.S. Patent No. 6,067,683 issued to Okada et al. (the "Okada reference").

7. GROUPING OF CLAIMS

Group I: claims 1, 2, 3, and 8 stand or fall as a group.

Group II: claim 4 stands or falls as a group.

Group III: claim 5 stands or falls as a group.

Group IV: claim 6 stands or falls as a group.

Group V: claim 7 stands or falls as a group.

Group VI: claims 9, 10, and 12-14 stand or fall as a group.

Group VII: claim 11 stands or falls as a group.

Group VIII: claims 16, 18, and 19 stand or fall as a group.

Group IX: claim 17 stands or falls as a group.

Group X: claim 20 stands or falls as a group.

Group X1: claim 21 stands or falls as a group.

Group XII: claim 22 stands or falls as a group.

Group XIII: claim 23 stands or falls as a group.

8. ARGUMENT

A. Group I

Claim 1 under appeal calls for:

1. A method of sorting a plurality of items by destination, the method comprising:
defining a number of locations, where each location is a position for a container;
assigning each location a speed of loading rating;
creating a scheme of destinations;
reading a destination code from each of the plurality of items;
determining whether the destination code is assigned a location;
if the destination code is assigned a location, loading the item in a container at the assigned location;
if the destination code is not assigned a location, **determining whether to assign the destination code a location based on whether the destination code is in the scheme of destinations**, the projected or historical number of items having the same destination code, **and the speed of loading rating for each location**. [Emphasis added].

Claim 1 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the Jones reference in view of the Okada reference. To establish a *prima facie* case of obviousness, three basic criteria must be met. *M.P.E.P.* §§ 706.02(j) and 2143.

> First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The

> teaching or suggestion to make the claimed combination and the reasonable expectation of success must be both found in the prior art, not in applicants' disclosure.

Id. The mere fact that the references can be combined does not render the resultant combination obvious unless the prior art suggests the desirability of the combination. *M.P.E.P.* § 2143.01. "Determination of obviousness can not be based on the hindsight combination of components selectively culled from the prior art to fit the parameters of the patented invention." *ATD Corp. v. Lydall, Inc.*, 159 F.3d 534, 546 (Fed. Cir. 1998). The initial burden is on the Examiner to provide some suggestion of the desirability of doing what the inventors have done. *M.P.E.P.* § 706.02(j); *see also In re Rougget*, 149 F.3d 1350, 1355 (Fed. Cir. 1998) ("To reject claims in an application under section 103, an examiner must show an unrebutted *prima facie* case of obviousness . . . . In the absence of a proper *prima facie* case of obviousness, an applicant who complies with the other statutory requirements is entitled to a patent.") On appeal to the Board, an applicant can overcome a rejection by showing insufficient evidence of *prima facie* obviousness or by rebutting the *prima facie* case with evidence of secondary indicia of nonobviousness. *In re Rougget* 149 F.3d at 1355. Applicant contends that the Examiner's proposed combination for the claims at issue does not meet the *prima facie* case of obviousness.

1. Discussion of the Cited References.

Before discussing the cited references, it is noted that the reference number and citations used in this portion of this Appeal Brief are the numbers used in, and are made to the column and line locations of, the respective references.

The Jones reference describes a sorting system. The sorting system is more specifically a carousel-type system 2 that includes storage receptacles 4. The storage receptacles 4 rotate

under mail feeds located at an inlet area 8. Output receptacles 12 are positioned at an outlet area 10. The output receptacles 12 receive mail items from the storage receptacles 4. The Jones reference describes the system as follows:

> FIG. 1 shows a carousel-type system 2, having a large number of storage receptacles 4, carried around a track 6, in the direction shown by the arrows marked thereon. **The carousel system is of a type which is generally known in itself, although it must have certain characteristics for optimum use in the overall sorting system of the present invention**. These characteristics will be discussed in greater detail below.
>
> . . . the storage receptacles 4 are of a type generally intended for transporting large (for example A4 size), relatively flat pieces of mail, each mail piece being held within the storage receptacle in a vertical plane.
>
> Col. 2, lines 39-50 (emphasis added).

As will be described in more detail later and as indicated by the highlighted sentence above, the system described in the Jones reference relies on a carousel. Before further addressing this feature, however, it is important to note the following. According to the Jones reference,

> each output receptacle 12 is positioned to receive items from the storage receptacles 4 as they pass above. . . . [And,] each output receptacle may be manually removed by a human operator, who will need to be provided with an indication as to the next destination for the contents. . . . .
>
> As an alternative, the outlet receptacles [12] may be automatically detachable, and passed to a further automated handling system. If this automated handling system has means for reading codes which identify the intended future destination of the contents, then each storage receptacle may have an appropriate code applied thereto before detachment of the receptacle. . . . .
>
> As a further alternative, if the control of the sorting system and the downstream automated handling system is unified, the automated handling system may be provided directly with instructions regarding the destination of the receptacle and its contents.
>
> Col. 3, lines 2-30.

The system 2 is controlled by a control system 16, col. 3, lines 44-45, and relies on a relatively high proportion of storage receptacles to output receptacles to operate. Col. 4, lines 8-14. Numerous receptacles are needed, and the Jones reference indicates that in at least one embodiment thousands of storage receptacles and hundreds of output receptacles are used. An example of the operation of the system 2 is provided in col. 5, beginning at line 43. The description reads as follows:

> An example of the operation of the control system will now be given:
>
> Starting from a system with no mail in it, as mail pieces enter the system, the most frequently occurring mail groups identified within the input mail set are allocated to respective output receptacles [12]. Mail pieces in mail groups with allocated output receptacles are then transferred from the storage receptacles [4] to the output receptacles [12] as they pass. Once all of the output receptacles [12] have mail groups allocated to them, mail destined for other mail groups can be stored within the storage receptacles [4]. Then, as output receptacles [12] fill up and are emptied, mail groups which have mail pieces stored within the storage receptacles [4] can be allocated to the emptied output receptacle [12], allowing those storage receptacles [4] to be emptied. While the number of different mail groups within the storage receptacles is relatively low, the amount of recirculation is kept low and hence the rate of mail processing is kept high. The amount of recirculation affect[s] the overall processing rate because each recirculating item fills a storage receptacle [4] which is unable to receive an incoming mail piece.

As the above "example of the operation of the control system" makes clear, output receptacles 12 may be associated with or assigned a destination. That is, each output receptacle 14 is associated with a particular mail group, which might typically have a single common or limited common set of destinations. The destination or destinations would be commonly indicated by zip or postal code. However, neither the above cited portion nor any other portion of the Jones reference indicates that defining particular locations in the carousel, where each location is a position for a container, and assigning each location a speed of loading rating is important. For that matter, nowhere is there any mention of these acts or concepts.

The complete absence of any discussion or teaching of these matters is consistent with the basic design of the carousel system described in the Jones reference. The carousel is turning at a generally constant speed. *See* Col. 4, lines 24-25 ("[t]he carousel 6 is **continuously rotating**, which means that empty storage receptacle[s] 4 are **regularly passing the inlets**."). (In order to have the storage receptacles 4 pass the inlets on a regular basis, a generally constant speed is required and there is nothing in the Jones reference to indicate, by implication or otherwise, that the carousel undergoes controlled, purposeful accelerations, except perhaps upon initial startup or shutdown.) In addition, the circular nature of the carousel results in the output receptacles being placed at positions that are equidistant from the center of the carousel. Thus, speed is of little, if any, concern, as there is little, if any, difference in the speed of loading items from one output receptacle 12 to another. In addition, all of the container positions as well as the containers themselves (output receptacles 12) are identical. Thus, there is little if any need or desirability of assigning or tracking specific locations for containers in the system.

Another deficiency or area where any teaching or suggestion is completely absent is the creation of a scheme of destinations. Neither the cited portions of the Jones reference nor any other portion of the Jones reference indicates that a scheme of destinations is created and that the scheme of destinations is used to determine, as is the case in the claimed subject matter, "whether to assign [a read] destination code a location based on whether the destination code is in the scheme of destinations." The output receptacles 12 are located to receive items from the storage receptacles 4 as the storage receptacles pass above the output receptacles 12. Col. 3, lines 2-3. However, the location of the output receptacles 12 in the circle underneath the circular track 6 is never predefined. There is no explicit explanation provided in the Jones reference, but the discussion in columns 5 and 6 makes it clear that there is an arbitrary or random assignment

of destinations to the output receptacles based on the most frequently occurring mail groups (i.e., destination). Further, it is only after many pieces of mail have been collected in storage receptacles 4 that the mail is placed in an output receptacle 12. Col. 4, lines 44-54. Further still, the placement of mail in an output receptacle 12 is not based on the location of the output receptacle in the circle below the track 6. Rather, it is based on availability and other factors. *See* Col. 5, lines 45-63. So, for example, if there are 35 pieces of mail all addressed to postal code 12345, the system 2 merely determines if there is an output receptacle 12 somewhere in the circle below the track that can accept the 35 pieces of mail. According to the information provided in the Jones reference, each output receptacle is designed to hold about 40 pieces of mail. Thus, in the current example, all the mail addressed to postal code 12345 will fit in a single output receptacle. The first empty output receptacle 12 that is available in the circle under the track 6 is assigned that mail group and mail from one or more storage receptacles having the postal code 12345 is dropped into that output receptacle. As discussed above with respect to the discussion in col. 3 of the Jones reference, the system 2 has the ability to label the chosen output receptacle as having mail with the postal code 12345, but the location of the output receptacle 12 is not tracked and has little, if any, impact on the how the system operates or how efficiently sorting is accomplished.

In contrast, in Applicant's invention a sort scheme is created and stored in a sort scheme module. More specifically,

> The sort scheme module 56 can accept a sort scheme 57 as input or generate the presently programmed sort scheme as output in the form of a printed form or an image on a display (not shown). The system controller also includes a database module 58 that includes a database of destination assignments for the system. The database module 58 also receives destination codes or, more broadly, item identifiers as read by item reader (discussed below) through a controller interface 59.

Page 5, line 20 through page 6, line 2.

The sort scheme is further described later in Applicant's specification as follows:

> Although assigning destinations to locations is done dynamically, some set or plurality of locations within a cell is defined before sorting begins. Generally, the determination or defining of the locations will be based on a human or machine estimate as to the number and types of locations (i.e., cart or pallet) that will be needed to handle a load of items sent to the system 30. In the system 30 each location may be assigned a speed of loading which represents the time needed for the robot 36 to move from the pick-up point to the location. While it is possible to configure a cell such that the distance from the pick-up point to a location is equidistant, as would be the case with a circular cell with a central pick-up point, in most instances, a cell will have a rectangular configuration, meaning that the distances to locations will vary. Thus, the time to load items to any particular location will also vary. In the present invention, this variation is exploited by assigning locations with high speed of loading ratings to destinations to which a large number of items are addressed. Locations with low speed of loading ratings can be assigned destinations to which a small or lesser number of items are addressed. Speed of loading ratings may be absolute, i.e., based on empirical evidence of the number of items that may be loaded to a location in a predetermined amount of time or based on a relative scale, such as from 1 to 100. Once the locations are defined and speed of loading ratings assigned, a base scheme of destinations may be created. The scheme may assign destinations to all of the locations, but preferably the scheme only assigns destinations to a relatively few number of the available locations and the assignments that are made are for destinations that a large number of items are expected to be assigned.

Page 10, lines 1-22.

There is no similar discussion in the Jones reference about the creation of a sort scheme.

Another point made clear from the discussion above is the impact that the configuration of a sorting system has on the sorting process, particularly whether the sorting system is circular or not. In a non-circular system distances to and between locations within a cell or system are not equidistant. If it takes a robot arm or other device more time to reach one location than another, the speed of sorting can be directly affected based on creating an efficient scheme of destinations. For example, in Applicant's system it is generally preferred that the most common

destination be associated with a location having a high speed of loading rating. The number of times the robot travels to the destination associated with the most common destination will be greater than the number of movements required for any other destination. Thus, if a location having a high speed of loading rating is chosen for that destination, the overall sorting time may be reduced in comparison to assigning the most common destination a location with a low speed of loading rating. The above is only a simple example, but these types of considerations are simply not relevant to the system shown in the Jones reference, as is evidenced by a lack of any discussion that could reasonably be construed as teaching or suggesting a speed of loading rating. Furthermore, any application or consideration of a speed of loading rating in the Jones methodology would have little or no impact on its operation because any impact of unequal distances between the storage receptacles 4 and output receptacles 12 at a given moment in time is negated by the generally constant speed of the carousel 6, the rotating and circular nature of the system, and the numerous storage and output receptacles used.

The Okada reference teaches a sorter mechanism. According to the Okada reference, a "conveying system" is illustrated in FIG. 1. Col. 2, line 66. The conveying system includes an orienting apparatus 10 to arrange articles in a single file configuration. The conveying system also includes conveyors 4 and 5 to create a minimum spacing between adjacent articles. The single-file oriented and spaced items are sent to a sorter conveyor 14. A reading/sensing mechanism 12 downstream of conveyors 4 and 5 verifies that the articles are properly spaced. If a minimum space is not detected, a diverter 26 is activated to divert the article to a recirculation conveyor 24. The articles that are properly spaced are transmitted to branch lines 16-18. Nothing in the Okada reference teaches or suggests defining a number of locations, where each location is a position for a container; creating a scheme of destinations; determining whether a

read destination code is assigned a location; and then if the destination code is assigned a location, loading the item in a container at the assigned location; and if the destination code is not assigned a location, determining whether to assign the destination code a location based on whether the destination code is in the scheme of destinations, the projected or historical number of items having the same destination code, and/or the speed of loading rating for each location.

The Office indicates that the Okada reference teaches locations 16, 17, and 18 and "assigning each location a speed of loading rating 15 and 30 which represents the time needed to move from a position detector 15 to the locations 16, 17 and 18." Page 3 of the November 21st Office action. The reference numeral 15 refers to a detector and the reference numeral 30 references a schematically illustrated timer that appears to be somehow connected to the controller 21. FIG. 1. Other than the illustration in FIG. 1, the Okada reference is completely devoid of any explicit descriptions as to the role or operation of the timer 30. However, to the extent that any comprehensible teaching can be derived from the Okada reference with respect to the timer 30, the role of the timer 30 appears to relate to the "purge period" discussed in col. 4, lines 19-46, not any speed of loading rating. With respect to a speed of loading rating being derived from "the time needed to move from a position detector 15 to the locations 16, 17 and 18," the Okada reference teaches that a diverter paddle 20 is actuated by a control mechanism 21 "in response to a signal from the scanner to divert packages to respective branch lines corresponding to the addresses read by the scanner," col. 1, lines 18-22, **not** in response to timing or distance information. In fact, in the only place where there is any discussion that could possibly be construed as relating to distances, the Okada reference states that the "controller, knowing the speed of the conveyor on which the packages are being passed through the scanner, can determine whether there exists a proper interval between successive packages." Col. 3, lines

64-67. Nowhere, however, is there a more specific discussion as to 1) the exact mechanism that is used to ensure that the appropriate paddle 20 is actuated when a subject package has reached its appropriate branch line, or 2) speeds of the packages traveling in the system or speeds of loading or loading ratings. As one way of evidencing the sparseness of the discussion on these issues, Applicant notes that the words "location," "loading," and "rating" don't even appear in the Okada reference.

To the extent that the Office considers the Okada reference as teaching a speed of loading rating, such teaching appears to be one constructed not from what the Okada reference teaches or suggests, but from how the Office believes the Okada system operates or what the Office believes might be inherent in the Okada reference. First, the Applicant notes that what is explicitly taught by the Okada reference is that the paddles 20 are controlled based on information in "a signal from the scanner," not on any kind of distance or time information. In fact, in light of possible jamming and other malfunctioning of the paddles and/or the scanner, it would be unlikely that any time or speed information would be used to control sorting or that such information would be assigned to any of the branch lines 16-18. More likely and consistent with the discussion that is provided in the Okada reference, the signal from the scanner 12 and controller 21 includes information such as "activate the paddle 20 at line 18 the next time a package passes in front of line 18." Furthermore, even to the extent that there are inherent differences in the time it takes a package to reach the branch lines 16-18, there is nothing in the Okada reference to indicate that those time differences are in any way recognized, let alone used to control the sorting process. The Office states that "it would have been obvious to one of skill in the art to modify the method and system of Jones et al. to have a speed of loading rating as taught by Okada et al. to prevent the items [from] being inadvertently diverted to incorrect

locations," page 4 of the November 21st Office action, and cites col. 3, lines 30 through 60 of the Okada reference. However, the section cited by the Office indicates that the problem of inadvertently diverting packages to incorrect branch lines is solved by "detecting packages traveling abreast . . . [or] too closely . . . [and moving those packages] onto a recirculation conveyor." Col 3. lines 30-42. The Okada reference **does not** indicate that the time it takes any package to move from the position detector 15 to one of the branch lines 16-18 plays any role or is in any way considered by the controller 21 or in the sorting process disclosed. Thus, to say that the Okada reference teaches or suggests "assigning each location a speed of loading rating" is erroneous, and such a statement can only be made if the Okada reference is misconstrued.

Assuming for the sake of argument only that the Okada reference teaches assigning a speed of loading rating, there is no suggestion or motivation to combine the teachings of the references. The Jones reference discloses a carousel system with equidistant points and has no need for a speed of loading rating. Accordingly, there is no reason to modify the teachings of the Jones reference by incorporating any teachings of the Okada reference.

2. Discussion of Claim 1.

As noted, independent claim 1 defines a method comprising the acts of:

defining a number of locations, where each location is a position for a container;
assigning each location a speed of loading rating;
creating a scheme of destinations;
reading a destination code from each of the plurality of items;
determining whether the destination code is assigned a location;
if the destination code is assigned a location, loading the item in a container at the assigned location;
if the destination code is not assigned a location, **determining whether to assign the destination code a location based on whether the destination code is in the scheme of destinations**, the projected or historical number of items having the same destination code, **and the speed of loading rating for each location**.

As noted above, the Jones reference does not teach or suggest defining a number of locations, assigning each location a speed of loading rating, or creating a scheme of destinations. The Office has admitted that, at a minimum, the Jones reference does not teach a speed of loading rating. As noted above, the Okada reference does not teach a speed of loading rating, and does not use a speed of loading rating to control sorting of items. As also noted above, there is no reason or suggestion to combine the references because using a speed of loading rating in the Jones device would have little if any impact on its ability to sort items or its efficiency in sorting. As a consequence, there is no reasonable basis for asserting that the cited references teach or suggest the claimed subject matter, including "**determining whether to assign the [read] destination code a location based on whether the destination code is in the scheme of destinations**, the projected or historical number of items having the same destination code, **and the speed of loading rating for each location.**" These acts are not discussed in either of the references and, as demonstrated above, any inferences the Office has attempted to draw are erroneous. Since the cited references, either alone or combined, do not teach or suggest all of the claim limitations, claim 1 is allowable. Accordingly, Group I is allowable.

B. Group II

Claim 4 is separately patentable from claim 1 because claim 4 is directed to a method that includes additional acts not specified in claim 1. More specifically, claim 4 is separately patentable from claim 1 because there is no teaching, suggestion, or motivation to determine whether to assign the destination code a location based on a set of restrictions beyond the existence of the destination code in the scheme of destinations, the projected or historical number of items having the same destination code, and the speed of loading rating for each location.

Claim 4 reads as follows:

4. A method as claimed in claim 1, wherein determining whether to assign the destination code is further based on reviewing a set of restrictions.

Claim 4 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the Jones reference in view of the Okada reference. As was set forth in Group I, to establish a *prima facie* case of obviousness, three basic criteria must be met: 1) there must be some suggestion or motivation to modify the references or to combine the reference teachings, 2) there must be a reasonable expectation of success, and 3) the prior art references when combined must teach or suggest all the claim limitations. Applicant contends that the Examiner's proposed combination for claim 4 does not meet the *prima facie* case of obviousness. Most importantly, the Examiner has not pointed out where any of the references teach such a set of restrictions, thereby failing to set forth a *prima facie* case of obviousness. Until the Office has met its burden, Applicant is entitled to a patent.

1. Discussion of the Cited References.

The references were discussed above with respect to Group I.

2. Discussion of Claim 4.

As already noted, the Jones and Okada references do not teach a speed of loading rating that is assigned to each location, where each location is a position for a container. Accordingly, there is no way that these references can teach or suggest using this and the other criteria specified in claim 1, plus additional criteria in a set of restrictions in order to determine whether to assign a location to a read destination code. Accordingly, Group II is allowable.

C. Group III

Claim 5 is separately patentable from claim 4 because claim 5 is directed to a method that includes additional acts not specified in claim 4. More specifically, claim 5 is separately patentable from claim 4 because there is no teaching, suggestion, or motivation to determine whether to assign the destination code a location based on a set of restrictions that includes the type of container in which the items are to be loaded.

Claim 5 reads as follows:

> 5. A method as claimed in claim 4, wherein the set of restrictions includes the type of container in which items are loaded.

Claim 5 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the Jones reference in view of the Okada reference. As noted, to establish a *prima facie* case of obviousness, 1) there must be some suggestion or motivation to modify or to combine the reference teachings, 2) there must be a reasonable expectation of success, and 3) the prior art references when combined must teach or suggest all the claim limitations. The Examiner's proposed combination for claim 5 does not create a *prima facie* case of obviousness. The Examiner has not pointed out where any of the references teach determining whether to assign a destination code a location based on the type of containers in which items are loaded. Until the Office has met its burden of showing a *prima facie* case of obviousness, Applicant is entitled to a patent.

1. Discussion of the Cited References.

The references were discussed above with respect to Group I.

2. Discussion of Claim 5.

As already noted, the Jones and Okada references do not disclose using an additional set of restrictions beyond the speed of loading rating and other factors set forth in claim 1 to determine whether to assign a destination code a location. Claim 5 requires that the type of container in which the items are loaded be considered. In the Jones reference, the items are loaded into output receptacles 12, which are illustrated as uniform, identical containers. In other words, only a single type of container is disclosed. Thus, the type of container is not used in any sorting decisions or algorithms. The Okada reference is bereft of any discussion whatsoever of the type of containers used to hold the items being sorted. Accordingly, there is no way that these references can teach or suggest using the criteria specified in claim 1, plus the additional factor of container type, in order to determine whether to assign a location to a read destination code. Accordingly, Group III is allowable.

D. ***Group IV***

Claim 6 is separately patentable from claim 4 since claim 6 is directed to a method that includes additional acts not specified in claim 4. More specifically, claim 6 is separately patentable from claim 6 because there is no teaching, suggestion, or motivation to determine whether to assign a destination code a location based on a set of restrictions that includes the work zone in which the containers for items are located.

Claim 6 reads as follows:

> 6. A method as claimed in claim 4, wherein the set of restrictions includes a work zone in which the containers for items are located.

Claim 6 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the Jones reference in view of the Okada reference. As noted, to establish a *prima facie* case of obviousness, 1) there must be some suggestion or motivation to modify or combine the teachings of the references, 2) there must be a reasonable expectation of success, and 3) the prior art references when combined must teach or suggest all the claim limitations. The Examiner's proposed combination for claim 6 does not create a *prima facie* case of obviousness. The Examiner has not pointed out where any of the references teach determining whether to assign a destination code a location based on the work zone in which the containers for items are located. Until the Office has met its burden of showing a *prima facie* case of obviousness, Applicant is entitled to a patent.

1. Discussion of the Cited References.

The references were discussed above with respect to Group I.

2. Discussion of Claim 6.

As noted, the Jones and Okada references do not disclose using an additional set of restrictions beyond the speed of loading rating and other factors set forth in claim 1 to determine whether to assign a destination code a location. Claim 6 requires that the work zone in which containers are located be considered. Neither the Jones reference nor the Okada reference discuss any type of cell or work zone. Accordingly, there is no way that the references can teach or suggest using the criteria specified in claim 1, plus the additional factor of work zone, in order to determine whether to assign a location to a read destination code. Accordingly, Group IV is allowable.

E. Group V

Claim 7 is separately patentable from claim 4 because there is no teaching, suggestion, or motivation to determine whether to assign a destination code to a location based on a set of restrictions that includes a limit on the number of locations to be assigned to any one location in which the containers for items are located.

Claim 7 reads as follows:

> 7. A method as claimed in claim 4, wherein the set of restrictions includes a limit on the number of locations assigned to any one destination.

Claim 7 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the Jones reference in view of the Okada reference. The Examiner's proposed combination for claim 7 does not create a *prima facie* case of obviousness because the Examiner has not pointed out where any of the references teach determining whether to assign a destination code a location based on a limit on the number of locations assigned to a destination. Until the Office has met its burden of showing a *prima facie* case of obviousness, Applicant is entitled to a patent.

1. Discussion of the Cited References.

The references were discussed above with respect to Group I.

2. Discussion of Claim 7.

As already noted, the Jones and Okada references do not disclose using an additional set of restrictions beyond the speed of loading rating and other factors set forth in claim 1 to determine whether to assign a destination code a location. Claim 7 requires that a limit on the

number of locations also be considered. Applicant has carefully reviewed the cited references and such a teaching or suggestion can not be found in either reference. Accordingly, there is no way that the references can teach or suggest using the criteria specified in claim 1, plus the additional factor of a limit on the number of locations, in order to determine whether to assign a location to a read destination code. Accordingly, Group V is allowable.

F. Group VI

In its current form, independent Claim 9 reads as follows:

> 9. A dynamic sortation system comprising:
> a cell having a plurality of locations, each location defining a position for a container and having a speed of loading rating;
> a sort scheme module operable to generate a database and storing a scheme of destinations;
> a controller coupled in data communication with the sort scheme module; and
> an item reader coupled in data communication with the controller and operable to read a destination code from each of a plurality of items,
> wherein, the sort scheme module is operable to determine whether a read destination code is assigned a location in the cell, and if the destination code is assigned a location, generating an instruction to load the item in a container at the assigned location, and if the destination code is not assigned a location, determining whether to assign the destination code a location based on whether the destination code is in the scheme of destinations and the projected or historical number of items having the same destination code.

Claim 9 is separately patentable from claim 1 because there is no teaching, suggestion, or motivation in the cited references to create a dynamic sortation system that, among other things, includes a cell with a plurality of locations, where each location defines a position for a container and has a speed of loading rating and a sort scheme module that is operable to generate a database and that stores a scheme of destinations.

Claim 9 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the Jones reference in view of the Okada reference. As noted, to establish a *prima facie* case of obviousness, 1) there must be some suggestion or motivation to modify the references or to combine the reference teachings, 2) there must be a reasonable expectation of success, and 3) the prior art references when combined must teach or suggest all the claim limitations. The Examiner's proposed combination for claim 9 does not create a *prima facie* case of obviousness. The Examiner has not pointed out where any of the references teach **a cell** having a plurality of locations, where each location defines a position for a container and also has a speed of loading rating. Furthermore, the Examiner has not pointed out where or how the references teach or suggest a sort scheme module that is operable to generate a data base and that stores a scheme of destinations. Until the Office has met its burden of showing a *prima facie* case of obviousness, Applicant is entitled to a patent.

1. Discussion of the Cited References.

The references were discussed above with respect to Group I.

2. Discussion of Claim 9.

As noted, the Jones and Okada references do not teach or suggest a speed of loading rating. In addition to requiring that each position for a container have a speed of loading rating, claim 9 requires that the locations be part of a cell. A cell is defined as a small room or bounded area.[1] There is nothing in either the Jones or Okada references to indicate that the disclosed sorting systems are positioned within a cell or bounded area of any kind. At most, it might be

[1] *See* definition of "cell" on page 239, *Webster's Encyclopedic Unabridged Dictionary of the English Language,* 1994.

said that the systems are likely placed in a warehouse or similar industrial building, but such buildings are not a cell, as is made clear by Applicant's dictionary citation.

In addition to failing to teach or suggest a cell, the cited references do not teach or suggest a sort scheme module as claimed. Again, the Office has failed to point out where the cited references suggest or teach a sort scheme module that is operable to generate a data base and that stores a scheme of destinations. Accordingly, in light of all of the above, Group VI is allowable.

G. Group VII

Claim 11 is separately patentable from claim 9 because there is no teaching, suggestion, or motivation to divide the cell into at least two zones.

Claim 11 reads as follows:

> 11. A dynamic sortation system as claimed in claim 9, wherein the cell is divided into at least two zones.

Claim 11 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the Jones reference in view of the Okada reference. As noted, to establish a *prima facie* case of obviousness, 1) there must be some suggestion or motivation to modify the references or to combine the reference teachings, 2) there must be a reasonable expectation of success, and 3) the prior art references when combined must teach or suggest all the claim limitations. The Examiner has not pointed out where any of the references teach or suggest a cell having a plurality of locations, where each location defines a position for a container and also has a speed of loading rating; and, as required in claim 11, where the cell is divided into at least two zones.

Until the Office has met its burden of showing a *prima facie* case of obviousness, Applicant is entitled to a patent.

1. Discussion of the Cited References.

The references were discussed above with respect to Group I.

2. Discussion of Claim 11.

As noted, the Jones and Okada references do not teach or suggest a speed of loading rating. In addition to requiring that each position for a container have a speed of loading rating, Claim 11 requires that the locations be part of a cell and that the cell be divided into two zones. As noted above, the Jones and Okada references do not teach or suggest a cell and they certainly do not teach a cell that is divided into two zones. Accordingly, Group VII is allowable.

H. Group VIII

In its current form, independent claim 16 reads as follows:

16. A method of sorting a plurality of items by destination in a robotic system, the method comprising:
defining a plurality of locations in a robotic cell, where each location is a position for a container;
assigning each location a speed of loading rating;
creating a scheme of destinations;
reading a destination code from each of the plurality of items;
determining whether the destination code is assigned a location;
if the destination code is assigned a location, picking-up the item and loading the item in a container at the assigned location;
if the destination code is not assigned a location, determining whether to assign the destination code a location based on whether the destination code is in the scheme of destinations and the historical number of items having the same destination code.

Claim 16 is separately patentable from claim 1 and claim 9 because there is no teaching, suggestion, or motivation in the cited references to create a method of sorting in a robotic system that, among other things, includes defining a plurality of locations in a robotic cell, where each location defines a position for a container, assigning a speed of loading rating to each location, and picking-up the item and loading the item in the container at the assigned location.

Claim 16 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the Jones reference in view of the Okada reference. As noted, to establish a *prima facie* case of obviousness, 1) there must be some suggestion or motivation to modify or combine the teachings of the references, 2) there must be a reasonable expectation of success, and 3) the prior art references when combined must teach or suggest all the claim limitations. The Examiner's proposed combination for claim 16 does not create a *prima facie* case of obviousness. The Examiner has not pointed out where any of the references teach a robotic cell having a plurality of locations, where each location defines a position for a container and has a speed of loading rating; and where the method involves picking-up the item and loading the item in a container at the assigned location. Furthermore, the Examiner has not pointed out where or how the references teach or suggest creating a scheme of destinations. Until the Office has met its burden of showing a *prima facie* case of obviousness, Applicant is entitled to a patent.

1. Discussion of the Cited References.

The references were discussed above with respect to Group I.

2. Discussion of Claim 16.

As already noted, the Jones and Okada references do not teach or suggest that each location be part of a cell, and there certainly has not been any demonstration that the references teach or suggest a robotic cell. Further, the Jones and Okada references do not teach or suggest assigning each location a speed of loading rating.

In addition to failing to teach or suggest the above, the cited references do not teach or suggest picking-up the items and loading the items in the containers at the assigned location. Again, the Office has failed to point out where the cited references suggest or teach such acts. Accordingly, in light of all of the above, Group VIII is allowable.

I. Group IX

Claim 17 is separately patentable from claim 16 because there is no teaching, suggestion, or motivation to determine whether to assign a destination code a location based on the speed of loading rating in addition to the historical number if items having the same destination code.

Claims 17 reads as follows:

> 17. A method as claimed in claim 16, wherein determining whether to assign the destination code a location is also based on the speed of loading rating for each location.

Claims 17 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the Jones reference in view of the Okada reference.

1. Discussion of the Cited References.

The references were discussed above with respect to Group I.

2. Discussion of Claim 17.

As noted, the Jones and Okada references do not teach or suggest a speed of loading rating. Further, there is no teaching or suggestion of using the speed of loading rating in assigning destinations a location. Accordingly, Group IX is allowable.

J. Group X

Claim 20 is separately patentable from claim 16 because claim 20 is directed to a method that includes additional acts not specified in claim 16. More specifically, claim 20 is separately patentable from claim 20 because there is no teaching, suggestion, or motivation to determine whether to assign the destination code based on a set of restrictions beyond the existence of the destination code in the scheme of destinations, the projected or historical number of items having the same destination code, and the speed of loading rating for each location.

Claim 20 reads as follows:

> 20. A method as claimed in claim 16, wherein determining whether to assign the destination code is further based on reviewing a set of restrictions.

Claim 20 stands rejected under 35 U.S.C. § 102 as being unpatentable over the Jones reference. To set out a *prima facie* case of anticipation of a claim, each and every limitation in the claim must be shown in a single reference. Applicant contends that the asserted rejection of claim 20 does not meet the *prima facie* case of anticipation. Furthermore, the cited references do not render the claimed subject matter obvious.

1. Discussion of the Cited References.

The references were discussed above with respect to Group I.

2. Discussion of Claim 20.

As noted, the Jones and Okada references do not teach a speed of loading rating that is assigned to each location, where each location is a position for a container. Accordingly, there is no way that these references can teach or suggest using this and the other criteria specified in claim 16, plus additional criteria in a set of restrictions in order to determine whether to assign a location to a read destination code. Accordingly, Group X is allowable.

K. Group XI

Claim 21 is separately patentable from claim 20 because there is no teaching, suggestion, or motivation to determine whether to assign the destination code based on a set of restrictions that includes the type of container in which the items are to be loaded.

Claim 21 reads as follows:

> 21. A method as claimed in claim 20, wherein the set of restrictions includes the type of container in which items are loaded.

Claim 20 stands rejected under 35 U.S.C. § 102 as being unpatentable over the Jones reference. To set out a *prima facie* case of anticipation of a claim, each and every limitation in the claim must be shown in a single reference. Applicant contends that the asserted rejection of claim 21 does not meet the *prima facie* case of anticipation. Furthermore, the cited references do not render the claimed subject matter obvious.

1. Discussion of the Cited References.

The references were discussed above with respect to Group I.

2. Discussion of Claim 21.

As already noted, the Jones and Okada references do not disclose using an additional set of restrictions beyond the speed of loading rating and other factors set forth in claim 16 to determine whether to assign a destination code a location. Claim 21 requires that the type of container in which the items are loaded also be considered. In the Jones reference, the items are loaded into output receptacles 12, which are illustrated as uniform, identical containers. In other words, there is only a single type of container and no consideration is made whether to load items based on the type of container. The Okada reference is bereft of any discussion of types of containers. Accordingly, there is no way that these references can teach or suggest using container type in order to determine whether to assign a location to a read destination code. Accordingly, Group XI is allowable.

L. *Group XII*

Claim 22 is separately patentable from claim 20 because there is no teaching, suggestion, or motivation to determine whether to assign a destination code a location based on a set of restrictions that includes the work zone in which the containers for items are located.

Claim 22 reads as follows:

> 22. A method as claimed in claim 20, wherein the set of restrictions includes a work zone in which the containers for items are located.

Claim 22 stands rejected under 35 U.S.C. § 102 as being unpatentable over the Jones reference. To set out a *prima facie* case of anticipation of a claim, each and every limitation in the claim must be shown in a single reference. Applicant contends that the asserted rejection of claim 22 does not meet the *prima facie* case of anticipation. Furthermore, the cited references do not render the claimed subject matter obvious.

1. Discussion of the Cited References.

The references were discussed above with respect to Group I.

2. Discussion of Claim 22.

As already noted, the Jones and Okada references do not disclose using an additional set of restrictions beyond the speed of loading rating and other factors set forth in claim 16 to determine whether to assign a destination code a location. Claim 22 requires that the work zone in which containers are located be considered. Neither the Jones reference nor the Okada reference discuss any type of cell or work zone. Accordingly, there is no way that the references can teach or suggest using the criteria specified in claim 20, plus the additional factor of work zone in order to determine whether to assign a location to a read destination code. Accordingly, Group XII is allowable.

M. Group XIII

Claim 23 is separately patentable from claim 20 because there is no teaching, suggestion, or motivation to determine whether to assign a destination code to a location based on a set of restrictions that includes a limit on the number of locations to be assigned to any one destination.

Claim 23 reads as follows:

23. A method as claimed in claim 20, wherein the set of restrictions includes a limit on the number of locations assigned to any one destination.

Claim 23 stands rejected under 35 U.S.C. § 102 as being unpatentable over the Jones reference. To set out a *prima facie* case of anticipation of a claim, each and every limitation in the claim must be shown in a single reference. Applicant contends that the asserted rejection of claim 21 does not meet the *prima facie* case of anticipation. Furthermore, the cited references do not render the claimed subject matter obvious.

1. Discussion of the Cited References.

The references were discussed above with respect to Group I.

2. Discussion of Claim 23.

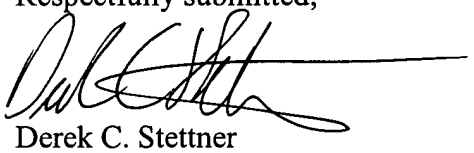
As already noted, the Jones and Okada references do not disclose using an additional set of restrictions beyond the speed of loading rating and other factors set forth in claim 16 to determine whether to assign a destination code a location. Claim 23 requires that a limit on the number of locations also be considered. Applicant has carefully reviewed the cited references and such a teaching or suggestion can not be found in either reference. Accordingly, there is no way that the references can teach or suggest using the criteria specified in claim 20, plus the additional factor of a limit on the number of locations in order to determine whether to assign a location to a read destination code. Accordingly, Group XIII is allowable.

9. CONCLUSION

In view of the foregoing, the Board is respectfully requested to reverse the Examiner's rejection of claims 1-14 and 16-23 under 35 U.S.C. §§ 102 and 103(a).

The Commissioner is authorized to charge any additional fees that may be required or credit overpayment to deposit account 13-3080.

Respectfully submitted,



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APPENDIX

1. A method of sorting a plurality of items by destination, the method comprising:

defining a number of locations, where each location is a position for a container;

assigning each location a speed of loading rating;

creating a scheme of destinations;

reading a destination code from each of the plurality of items;

determining whether the destination code is assigned a location;

if the destination code is assigned a location, loading the item in a container at the assigned location;

if the destination code is not assigned a location, determining whether to assign the destination code a location based on whether the destination code is in the scheme of destinations, the projected or historical number of items having the same destination code, and the speed of loading rating for each location.

2. A method as claimed in claim 1, further comprising:

recirculating an item when a determination is made not to assign the destination code a location.

3. A method as claimed in claim 1, further comprising:

rejecting an item when a determination is made not to assign the destination code a location.

4. A method as claimed in claim 1, wherein determining whether to assign the destination code is further based on reviewing a set of restrictions.

5. A method as claimed in claim 4, wherein the set of restrictions includes the type of container in which items are loaded.

6. A method as claimed in claim 4, wherein the set of restrictions includes a work zone in which containers for items are located.

7. A method as claimed in claim 4, wherein the set of restrictions includes a limit on the number of locations to be assigned to any one destination.

8. A method as claimed in claim 2, further comprising tracking the number of items in recirculation.

9. A dynamic sortation system comprising:

a cell having a plurality of locations, each location defining a position for a container and having a speed of loading rating;

a sort scheme module operable to generate a database and storing a scheme of destinations;

a controller coupled in data communication with the sort scheme module; and

an item reader coupled in data communication with the controller and operable to read a destination code from each of a plurality of items,

wherein, the sort scheme module is operable to determine whether a read destination code is assigned a location in the cell, and if the destination code is assigned a location, generating an instruction to load the item in a container at the assigned location, and if the destination code is not assigned a location, determining whether to assign the destination code a location based on whether the destination code is in the scheme of destinations and the projected or historical number of items having the same destination code.

10. A dynamic sortation system as claimed in claim 9, wherein the sort scheme module determines whether to assign the destination code a location based on the speed of loading rating for each location.

11. A dynamic sortation system as claimed in claim 9, wherein the cell is divided into at least two zones.

12. A dynamic sortation system as claimed in claim 9, wherein each destination code takes the form of a bar code.

13. A dynamic sortation system as claimed in claim 12, wherein the item reader is a barcode reader.

14. A dynamic sortation system as claimed in claim 9, wherein each destination code is selected from the group of ZIP, CIN, DOD, and AIN codes.

16. A method of sorting a plurality of items by destination in a robotic system, the method comprising:

defining a plurality of locations in a robotic cell, where each location is a position for a container;

assigning each location a speed of loading rating;

creating a scheme of destinations;

reading a destination code from each of the plurality of items;

determining whether the destination code is assigned a location;

if the destination code is assigned a location, picking up the item and loading the item in a container at the assigned location;

if the destination code is not assigned a location, determining whether to assign the destination code a location based on whether the destination code is in the scheme of destinations and the historical number of items having the same destination code.

17. A method as claimed in claim 16, wherein determining whether to assign the destination code a location is also based on the speed of loading rating for each location.

18. A method as claimed in claim 16, further comprising:

recirculating an item when a determination is made not to assign the destination code a location.

19. A method as claimed in claim 16, further comprising:

rejecting an item when a determination is made not to assign the destination code a location.

20. A method as claimed in claim 16, wherein determining whether to assign the destination code is further based on reviewing a set of restrictions.

21. A method as claimed in claim 20, wherein the set of restrictions includes the type of container in which items are loaded.

22. A method as claimed in claim 20, wherein the set of restrictions includes a work zone in which containers for items are located.

23. A method as claimed in claim 20, wherein the set of restrictions includes a limit on the number of locations to be assigned to any one destination.

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